

REMARKS

Applicants acknowledge receipt of the Final Office Action mailed November 30, 2009.

In the Final Office Action, the Examiner rejected claims 31-34, 38-45, 49-51, 53-65, 67, and 68 under 35 U.S.C. § 103(a) as being unpatentable over *Pneumatiques* (GB 1,091,507) in view of *Okamoto* (U.S. Patent No. 5,287,691); rejected claims 31-37, 39-48, 50, 51, and 53-65 under 35 U.S.C. § 103(a) as being unpatentable over *Pneumatiques* in view of *Mizuma* (JP Patent No. 11-241282); and rejected claims 31, 41, and 52 under 35 U.S.C. § 103(a) as being unpatentable over *Io* (JP Patent No. 06-024216) in view of *Okamoto*.

In this Amendment, Applicants amend claim 31, and cancel claim 67, without prejudice or disclaimer. Upon entry of this Amendment, claims 31-65 and 68 will be pending. Of these claims, claim 31 is independent.

The originally-filed specification, claims, abstract, and drawings fully support the amendments to claim 31. No new matter has been introduced.

Based on the foregoing amendments, Applicants traverse the rejections above and respectfully request reconsideration for at least the reasons that follow.

I. 35 U.S.C. § 103(a) REJECTIONS

Applicants traverse the rejection of claims 31-34, 38-45, 49-51, 53-65, 67, and 68 under 35 U.S.C. § 103(a) as being unpatentable over *Pneumatiques* in view of *Okamoto*. Applicants respectfully disagree with the Examiner's arguments and conclusions and submit that amended independent claim 31 patentably distinguishes over *Pneumatiques* and *Okamoto* at least for the reasons described below. Applicants

further submit that the rejection of claim 67 has been rendered moot by the cancellation of that claim.

The key to supporting any rejection under 35 U.S.C. § 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. See M.P.E.P. § 2142, 8th Ed., Rev. 7 (July 2008). Such an analysis should be made explicit and cannot be premised upon mere conclusory statements. See *id.* “A conclusion of obviousness requires that the reference(s) relied upon be enabling in that it put the public in possession of the claimed invention.” M.P.E.P. § 2145. Furthermore, “[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art” at the time the invention was made. M.P.E.P. § 2143.01(III), internal citation omitted. Moreover, “[i]n determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious.” M.P.E.P. § 2141.02(I), internal citations omitted (emphasis in original).

“[T]he framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). . . . The factual inquiries . . . [include determining the scope and content of the prior art and] . . . [a]scertaining the differences between the claimed invention and the prior art.” M.P.E.P. § 2141(II). “Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art.” M.P.E.P. § 2141(III).

Amended independent claim 31 recites a high performance pneumatic tyre, comprising: “at least one flipper; . . . wherein the at least one flipper comprises a plurality of first elongated reinforcing elements that are substantially parallel to each other, . . . and wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm.”

Pneumatiques discloses that “[t]he present invention is especially suitable for giant tyres such as truck tyres.” (*Pneumatiques*, p. 1, ll. 40-41). *Pneumatiques* further appears to disclose a pneumatic tire including a bead with a single inextensible reinforcing bead wire 10 surmounted by a rubber filler 11, the assembly being partially enclosed by a flipper 12 constituted by parallel cords, cables or wires, preferably metal wires, embedded in a calendered layer of rubber mixture. (*Id.* at p. 2, ll. 35-41). In the bead region, the carcass plies are divided into two equal or unequal groups, one of which, group 13, extends down the axially inner side of the filler 11 and is turned up outwardly about the wire 10 and back on itself along the axially outer side of the flipper 12. The other group of plies, group 14, extends radially inwardly in contact with stepped edges of the plies 13 and extends to the toe 15 of the bead. Located on the outside of the external group 14 of carcass plies are two flat stiffening strips 16. (*Id.* at p. 2, ll. 47-64).

As admitted by the Examiner, “*Pneumatiques* fails to expressly suggest a cord having at least one preformed element.” (*Final Office Action*, p. 2, para. 2, ll. 10-11).

Pneumatiques also fails to teach or suggest at least a high performance pneumatic tyre,

“wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm,” as recited in amended independent claim 31 (emphases added).

As discussed above, *Pneumatiques* relates to heavy duty tires, not high performance car or motorcycle tires. Further, the Examiner alleges that “*Pneumatiques* suggests the use of more than one flipper.” (*Final Office Action*, p. 3, ll. 19-20).

Pneumatiques, however, fails to disclose that the alleged flipper includes a plurality of first elongated reinforcing elements, wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm.

In order to cure the deficiencies of *Pneumatiques*, the Examiner relies on *Okamoto* and alleges “a metallic cord is recognized as providing improved corrosion resistance and fatigue resistance, as shown for example by *Okamoto* . . . *Okamoto* broadly teaches the use of such a metallic cord in tire constructions.” (*Final Office Action*, p. 2, para. 2, ll. 11-14). Applicants respectfully disagree. On the contrary, *Okamoto* specifically relates to belts and/or carcass plies (*Okamoto*, col. 1, ll. 20-24; col. 2, ll. 39-44; col. 3, ll. 38-44), whereas no reference is made by *Okamoto* to beads and/or bead components. In any case, such teaching does not constitute or suggest at least a high performance pneumatic tyre, “wherein the first elongated reinforcing

elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm,” as recited in amended independent claim 31 (emphases added).

Okamoto, for example, appears to disclose a metal cord formed by twisting two spirally pre-shaped metal filaments together with a twisting pitch *P*. The metal filament has not only the spiral shape formed by twisting, but retains so much of its spiral preshape as to have a pitch *p* equal to 0.20-0.50 times the twisting pitch and a diametric height *h* of 0.05-0.25 mm. (*Okamoto*, Abstract). *Okamoto* further discloses that “[i]n case of a metal cord formed by twisting two metal filaments together, like the one according to the present invention, the filament diameter should be preferably within the range of 0.27-0.35 mm.” (*Okamoto*, col. 5, ll. 35-38). Moreover, there is no specific example in *Okamoto* using filaments having diameter lower than 0.28 mm. Accordingly, *Okamoto* fails to disclose wherein each of the metallic elements has a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm. Actually, by specifically pointing to a filament diameter range of 0.27-0.35 mm for its cords, *Okamoto* teaches away from using filaments having diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm.

Furthermore, one of ordinary skill in the art would not have been motivated to combine the teachings of *Pneumatiques* and *Okamoto*, as suggested by the Examiner, because *Okamoto* relates to belts and/or carcass plies, while *Pneumatiques* relates to beads. There is no reasonable expectation of success derivable from *Okamoto* as far

as the application of its cords to the beads of *Pneumatiques* is concerned. This is because *Okamoto* presents its cords as being suitable for fatigue resistance and corrosion, which are typical problems associated with belts and/or carcasses (*Okamoto*, col. 1, ll. 20-24; col. 2, ll. 39-44; col. 3, ll. 38-44), but not beads. As disclosed in *Okamoto*, “[a]n object of this invention is to provide a corrosion-resistant, lightweight 1x2 metal cord w[hich] exhibits improved resistance to fatigue such as bending fatigue and compressive fatigue.” (*Okamoto*, col. 2, ll. 46-49). The belt/tread portion of a tire is the portion most subjected to corrosion since it is directly involved in the rolling of the tire, which may occur on wet surfaces. In such cases, water penetration into the tread can propagate towards the belts, so as to cause corrosion of the metal cords included in the belts. However, this is a minor problem for the bead portion of the tire, which is not a part which directly interacts with the road during the rolling of the tire.

As explained above, the elements of independent claim 31 are neither taught nor suggested by the cited references. Consequently, the Final Office Action has neither properly determined the scope and content of the prior art nor properly ascertained the differences between the prior art and the claim. Accordingly, no reason has been clearly articulated as to why the claim would have been obvious to one of ordinary skill in view of the prior art. Therefore, a *prima facie* case of obviousness has not been established for independent claim 31. Claim 31, and claims 32-34, 38-45, 49-51, 53-65, and 68 which depend from claim 31, are patentable over *Pneumatiques* and *Okamoto*. Applicants therefore request that the rejection of claims 31-34, 38-45, 49-51, 53-65, 67, and 68 under 35 U.S.C. § 103(a) be withdrawn.

Applicants traverse the rejection of claims 31-37, 39-48, 50, 51, and 53-65 under 35 U.S.C. § 103(a) as being unpatentable over *Pneumatiques* in view of *Mizuma*. Applicants respectfully disagree with the Examiner's arguments and conclusions and submit that amended independent claim 31 patentably distinguishes over *Pneumatiques* and *Mizuma* at least for the reasons described below.

Amended independent claim 31 recites a high performance pneumatic tyre, comprising: "at least one flipper; . . . wherein the at least one flipper comprises a plurality of first elongated reinforcing elements that are substantially parallel to each other, . . . and wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm."

As discussed above, *Pneumatiques* discloses that "[t]he present invention is especially suitable for giant tyres such as truck tyres." (*Pneumatiques*, p. 1, ll. 40-41). *Pneumatiques* further appears to disclose a pneumatic tire including a bead with a single inextensible reinforcing bead wire 10 surmounted by a rubber filler 11, the assembly being partially enclosed by a flipper 12 constituted by parallel cords, cables or wires, preferably metal wires, embedded in a calendered layer of rubber mixture. (*Id.* at p. 2, ll. 35-41). In the bead region, the carcass plies are divided into two equal or unequal groups, one of which, group 13, extends down the axially inner side of the filler 11 and is turned up outwardly about the wire 10 and back on itself along the axially outer side of the flipper 12. The other group of plies, group 14, extends radially inwardly in contact with stepped edges of the plies 13 and extends to the toe 15 of the bead.

Located on the outside of the external group 14 of carcass plies are two flat stiffening strips 16. (*Id.* at p. 2, ll. 47-64).

As admitted by the Examiner, “*Pneumatiques* fails to expressly suggest a cord having at least one preformed element.” (*Final Office Action*, p. 2, para. 2, ll. 10-11). *Pneumatiques* also fails to teach or suggest at least a high performance pneumatic tyre, “wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm,” as recited in amended independent claim 31 (emphases added).

As discussed above, *Pneumatiques* relates to heavy duty tires, not high performance car or motorcycle tires. Further, the Examiner alleges that “*Pneumatiques* suggests the use of more than one flipper.” (*Final Office Action*, p. 3, ll. 19-20). *Pneumatiques*, however, fails to disclose that the alleged flipper includes a plurality of first elongated reinforcing elements, wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm.

In order to cure the deficiencies of *Pneumatiques*, the Examiner relies on *Mizuma* and alleges “a metallic cord is recognized as providing high durability, as shown for example by *Mizuma* . . . *Mizuma* broadly teaches the use of such a metallic cord in tire constructions.” (*Final Office Action*, p. 5, para. 3, ll. 14-16). Applicants

respectfully disagree. On the contrary, *Mizuma* specifically relates to belts and/or carcass plies (*Mizuma*, Abstract, FIGs. 23-24), whereas no reference appears to be made in *Mizuma* to beads and/or bead components. In any case, *Mizuma*'s teaching does not constitute or suggest at least a high performance pneumatic tyre, "wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm," as recited in amended independent claim 31 (emphases added).

Mizuma, for example, discloses a steel cord including a single wire or twisted wires, which preferably comprise flat high tension steel wires having a carbon content of 0.07-1.00 wt.%. At least one of the wires does not have a straight line portion on a flat surface and only includes smooth, continuous curved portions, and is shaped in a two-dimensional wave form having a wave pitch of 2-10 mm and a wave height of 0.02-10 mm. The steel cords are embedded in a rubber molded product in the form of belt plies or carcass plies in steel radial tires. (*Mizuma*, Abstract). *Mizuma*, however, fails to teach or suggest a high performance pneumatic tyre including a flipper with a plurality of first elongated reinforcing elements, wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm.

Furthermore, one of ordinary skill in the art would not have been motivated to combine the teachings of *Pneumatiques* and *Mizuma*, as suggested by the Examiner, because *Mizuma* relates to belts and/or carcass plies (*Mizuma*, Abstract, FIGs. 23-24), while *Pneumatiques* relates to beads. There is no reasonable expectation of success derivable from *Mizuma* as far as the application of its cords to the beads of *Pneumatiques* is concerned. This is because, coherently with *Okamoto*, *Mizuma* presents its cords as being suitable for fatigue resistance in order to embed them in a rubber molded product in the form of belt plies or carcass plies.

As explained above, the elements of independent claim 31 are neither taught nor suggested by the cited references. Consequently, the Final Office Action has neither properly determined the scope and content of the prior art nor properly ascertained the differences between the prior art and the claim. Accordingly, no reason has been clearly articulated as to why the claim would have been obvious to one of ordinary skill in view of the prior art. Therefore, a *prima facie* case of obviousness has not been established for independent claim 31. Claim 31, and claims 32-37, 39-48, 50, 51, and 53-65 which depend from claim 31, are patentable over *Pneumatiques* in view of *Mizuma*. Applicants therefore request that the rejection of claims 31-37, 39-48, 50, 51, and 53-65 under 35 U.S.C. § 103(a) be withdrawn.

Applicants traverse the rejection of claims 31, 41, and 52 under 35 U.S.C. § 103(a) as being unpatentable over *Io* in view of *Okamoto*. Applicants respectfully disagree with the Examiner's arguments and conclusions and submit that amended

independent claim 31 patentably distinguishes over *Io* and *Okamoto* at least for the reasons described below.

Amended independent claim 31 recites a high performance pneumatic tyre, comprising: "at least one flipper; . . . wherein the at least one flipper comprises a plurality of first elongated reinforcing elements that are substantially parallel to each other, . . . and wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm."

Io appears to disclose a heavy duty radial tire with enhanced bead durability and without enlargement of the bead apex rubber thickness. The value $J1/I1+J1$ ranges from 45-50%, wherein $I1$ represents the bead apex rubber thickness at the winding end of a steel ply and $J1$ represents the dimension from the edge of the steel ply to the curving surface on the outside of the side wall. (*Io*, Abstract).

As admitted by the Examiner, "*Io* fails to expressly suggest a cord having at least one preformed element." (*Final Office Action*, p. 8, para. 4, ll. 9-10). *Io* also fails to teach or suggest at least a high performance pneumatic tyre, "wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm," as recited in amended independent claim 31 (emphases added).

As discussed above, *lo* relates to heavy duty tires, not high performance car or motorcycle tires. Further, the Examiner alleges that “*lo* is directed to a pneumatic tire construction comprising a chafer 3 and a flipper that is spaced from a carcass structure by said chafer.” (*Final Office Action*, p. 8, para. 4, ll. 5-7). *lo*, however, fails to disclose that the alleged flipper includes a plurality of first elongated reinforcing elements, wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm.

In order to cure the deficiencies of *lo*, the Examiner relies on *Okamoto* and alleges “a metallic cord is recognized as providing improved corrosion resistance and fatigue resistance, as shown for example by *Okamoto* . . . *Okamoto* broadly teaches the use of such a metallic cord in tire constructions.” (*Final Office Action*, p. 8, para. 4, ll. 10-13). Applicants respectfully disagree. On the contrary, *Okamoto* specifically relates to belts and/or carcass plies (*Okamoto*, col. 1, ll. 20-24; col. 2, ll. 39-44; col. 3, ll. 38-44), whereas no reference is made by *Okamoto* to beads and/or bead components. In any case, such teaching does not constitute or suggest at least a high performance pneumatic tyre, “wherein the first elongated reinforcing elements comprise greater than or equal to two metallic elements and less than or equal to five metallic elements, at least one of which is a preformed metallic element, each of the metallic elements having a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm,” as recited in amended independent claim 31 (emphases added).

As discussed above, *Okamoto*, for example, appears to disclose a metal cord formed by twisting two spirally pre-shaped metal filaments together with a twisting pitch P . The metal filament has not only the spiral shape formed by twisting, but retains so much of its spiral preshape as to have a pitch p equal to 0.20-0.50 times the twisting pitch and a diametric height h of 0.05-0.25 mm. (*Okamoto*, Abstract). *Okamoto* further discloses that “[i]n case of a metal cord formed by twisting two metal filaments together, like the one according to the present invention, the filament diameter should be preferably within the range of 0.27-0.35 mm.” (*Okamoto*, col. 5, ll. 35-38). Moreover, there is no specific example in *Okamoto* using filaments having diameter lower than 0.28 mm. Accordingly, *Okamoto* fails to disclose wherein each of the metallic elements has a diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm. Actually, by specifically pointing to a filament diameter range of 0.27-0.35 mm for its cords, *Okamoto* teaches away from using filaments having diameter greater than or equal to 0.05 mm and less than or equal to 0.20 mm.

Furthermore, one of ordinary skill in the art would not have been motivated to combine the teachings of *Io* and *Okamoto*, as suggested by the Examiner, because *Okamoto* relates to belts and/or carcass plies, while *Io* relates to beads. There is no reasonable expectation of success derivable from *Okamoto* as far as the application of its cords to the beads of *Io* is concerned. This is because *Okamoto* presents its cords as being suitable for fatigue resistance and corrosion, which are typical problems associated with belts and/or carcasses (*Okamoto*, col. 1, ll. 20-24; col. 2, ll. 39-44; col. 3, ll. 38-44), but not beads. As disclosed in *Okamoto*, “[a]n object of this invention is to provide a corrosion-resistant, lightweight 1x2 metal cord w[hich] exhibits improved

resistance to fatigue such as bending fatigue and compressive fatigue.” (*Okamoto*, col. 2, ll. 46-49). The belt/tread portion of a tire is the portion most subjected to corrosion since it is directly involved in the rolling of the tire, which may occur on wet surfaces. In such cases, water penetration into the tread can propagate towards the belts, so as to cause corrosion of the metal cords included in the belts. However, this is a minor problem for the bead portion of the tire, which is not a part which directly interacts with the road during the rolling of the tire.

As explained above, the elements of independent claim 31 are neither taught nor suggested by the cited references. Consequently, the Final Office Action has neither properly determined the scope and content of the prior art nor properly ascertained the differences between the prior art and the claim. Accordingly, no reason has been clearly articulated as to why the claim would have been obvious to one of ordinary skill in view of the prior art. Therefore, a *prima facie* case of obviousness has not been established for independent claim 31. Claim 31, and claims 41 and 52 which depend from claim 31, are patentable over *Io* in view of *Okamoto*. Applicants therefore request that the rejection of claims 31, 41, and 52 under 35 U.S.C. § 103(a) be withdrawn.

II. CONCLUSION

Applicants respectfully submit that claims 31-65 and 68 are in condition for allowance.

The Final Office Action contains characterizations of the claims and the related art with which Applicants do not necessarily agree. Unless expressly noted otherwise, Applicants decline to subscribe to any statement or characterization in the Final Office Action.

In view of the foregoing, Applicants respectfully request reconsideration and reexamination of this application, and the timely allowance of the pending claims.

If there is any fee due in connection with the filing of this Amendment, please charge the fee to Deposit Account 06-0916.

Respectfully submitted,

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GARRETT & DUNNER, L.L.P.

Dated: June 1, 2010

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